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PROFITABILITY ANALYSIS OF CASSAVA PRODUCTION IN CROSS-RIVER STATE, NIGERIA

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ABSTRACT

The study examined the profitability of cassava production in Cross River State, Nigeria. A multistage random sampling technique was used to select two hundred and seventy (270) cassava producers. Primary data were collected through the use of structured questionnaire and data were analysed using descriptive statistics (frequency distribution, pie chart, percentages and bar graph). Farm budgeting technique and financial analysis were also used. The result showed that majority (73%) was male and 60% of the farmers fell within the age brackets of 40-49 years. It also revealed that 90% of the farmers had formal education, 53% and 77% had household size of between 8-10 persons and posses above 2 hectares of farm land with majority (85%) have six years and above as farming experience. The ownership of land pattern favours the inheritance with major sources of capital (49%) accruing from personal savings. Similarly, the average total cost of cassava production per hectare was N103,010, average total returns was N325,700, the net farm income, profitability index, rate of return on investment and capital turnover of N222,690, 0.68%, 216.2% and 3.16% respectively indicated that it is quite profitable to engage in cassava production in the study area. The major constraints faced by cassava producers in the study area include inadequate capital, transportation, high cost of input, small farm size, low prices of farm produce among others. It is therefore, recommended that cassava producers in the study area should form cooperative society to enable easy access to credit and farm land, rural/feeder roads should be constructed by the Government to enable farmers in the rural area easy transport of their produce for sale, acquisition of inputs at a subsidized rate and promoting the use of improved and disease resistant varieties of cassava should be encouraged among the producers.

Key Words: profitability analysis, cassava, production, constraints, Cross River State.

Introduction

Cassava (Manihot Spp.) in Nigeria has assumed a prominent role as one of the major staple food not only among the rural people, but also among a lot of urban dwellers. The crop production generally requires less labour per unit of output than other major staple crops in Nigeria. It can grow and give reasonable yields in relatively poor soil and low rainfall area. Owing to these attributes it has become a critical food security crop in Nigeria (FAO 2004). Thus, with the growing population and declining real income, cassava has the potential to becoming a highly demanded food crop. Various parts of cassava such as the leaves, stem and roots are used for different purposes. The leaves are common vegetables among the Nigerians, while the stem is used as planting material. The root tuber which is the most desirable component is processed into various products like garri, cassava flour, fufu and tapioca. It is a rich source of industrial alcohol (ethanol) and starch. The export earnings derived from the crop increase the demand for cassava and promoted its cultivation (CBN, 2004).

Although Nigeria is the largest producer of cassava, it is yet to meet the potential demand both in the local and international markets. There is evidenced increase in efficiency of cassava production in Nigeria because national output of cassava increased by 12.1% from 31.7 million tones in 2003 to 36.1 million tones in 2005, while the land cultivated to cassava declined by 11.6% from 4,001 million hectares to 3,535 million hectares during the same periods. However, the low range of farm gate price is between N17.59/kg in 2003 and N19.97/kg in 2005 (CBN, 2008), this could act as disincentive to farmers. The world production of cassava root was estimated to be 184 million tones in 2002. The majority of production is in Africa where 99.1 million tones were grown, 51.5 million tones were grown in Asia and 33.2 million tones in Latin America and the Caribbean, (FAO, 2005). Nigeria has the largest harvest in the world; three times more than the production level of Brazil and almost double the production level in Thailand and Indonesia. IITA (2005) attributed the large harvest in Nigeria to rapid population growth, internal market demand, availability of high yielding improved varieties of cassava tuber in the country. It wide harvesting window allows it to act as a famine reserve and it is available in managing labour schedules. It also offers flexibility to resource poor farmers because it serves as either subsistence or as cash crop. (Nweke, 2004).

Based on these aforementioned importance of cassava, the Federal Government of Nigeria has in recent times made a policy shift that gave the production of cassava an unprecedented attention. The Federal Government has adopted a strategy of adding 10 percent cassava flour in wheat flour for local industries involved in confectioneries (Yakasai, 2010). The result of these Government policies has made cassava production to increase over the years. But this increase has not been sufficient to meet the increasing demand from the rapidly growing production sufficing that many people will adopt the production of cassava as the production of cassava is assumed profitable.

This raises the question as to: (1) Who are the cassava producers (2) What land tenure system exist in the area (3) Is the production of cassava profitable (4) What incentive are available for cassava producers and (5) Are there any problems hindering cassava production in the study area? Providing answers to these research questions form the objective/crux of this research work.

Methodology

The study area is Cross River State, one of the 36 States in Nigeria, located at the South-South geo-political zone of the country. Specifically, Cross River State is within latitude 4^{o} 28" and 6^{o} 55" of the equator and between longitude 8^{o} 00" and 9^{o} 00" East of the Greenwich Meridian. It shares common boundaries with Republic of Cameroon to the East, Benue State to the North, Ebonyi and Abia States to the West and Akwa Ibom State and the Atlantic Ocean to the South. The vegetation spans from Mangrove Swamp in the South to derived Savannah in the North favouring the production of varied crops cassava inclusive (FMARD, 2011).

There are eighteen Local Government Areas (LGAs) in the State and three Agricultural Development Programme (ADP) zones. Zone one comprises of Calabar Municipality, Calabar South, Akamkpa, Biase, Odukpani, Akpabuyo and Bakassi LGAs. Zone two comprises of Yakurr, Abi, Obubra, Ikom, Etung and Boki LGAs, Zone three comprises of Ogoja, Obudu, Bekwara, Obanliku and Yala LGAs.

Multi stage random sampling technique was used for the study. The first stage involves a random selection of three (3) Local Government Areas each from the three agricultural zones, this gave a total of Nine (9) LGAs, the second stage involves selecting three (3) communities each from each LGAs using simple random sampling technique, this gave a total of Twenty Seven (27) communities. The third stage involves the selection of ten (10) cassava farmers each

form the 27 communities using proportionate random sampling method from a sampling frame provided by ADP Cross River State. Thus, a total of Two Hundred and Seventy (270) cassava farmers constitute the sample size for the study.

Primary data were mainly obtained using structured questionnaires; this was supported with personal interview in situation where the respondents did not understand the questions. The collected data for the study were analysed using descriptive statistics. Descriptive statistics involving the use of measures of central tendency such as mean, frequency distribution, percentages e.t.c. were used to analyse the data on social-economic characteristics of the cassava farmers, the land tenure ship system and identified problems facing cassava production in the area. The Net Farm Income (NFI), as a budgeting technique and financial analysis were used to evaluate the profitability of cassava production. According to Achike and Anzaku (2010), Net Farm Income (NFI) is the income generated from the enterprise, which can be drawn with out affecting the future rate of production operation. It measures returns to unpaid factor inputs such as family labour. Simply put, Net Farm Income (NFI), signifies the difference between total returns in Naira for the farm and total expenses of production in Naira. NFI for production is expressed as follows:

NFI= GFI-TVC-TFC …… (1)

Where,

NFI = Net Farm Income (N)

GFI = Gross Farm Income (that is, value of the total cassava output) (N)

TVC= Total Variable Cost (N), expressed as follows:

$$\sum_{i=1} Pxi,Ki = (PxiK1 + Px2\ K2 \ldots\ldots Px7\ K7) \ldots\ldots\ldots\ldots\ldots\ldots (2)$$

Where,

Px_1 = Unit cost/rent of farmland dedicated to cassava production (N/Ha)

K1 = Size of farmland dedicated to cassava production (Ha)

Px2 = Unit cost of inorganic/organic fertilizer (N/Ha)

K2 = Quantity of Inorganic/Organic Fertilizer (kg)

Px3 = Unit cost of stem cutting (N1kg)

K3 = Quantity of stem cutting (kg)

Px4 = Unit cost of herbicide (N/litre)

K4 = Quality of herbicide (litre)

Px5 = Unit cost of pesticide (N/litre)

K5 = Quantity of pesticide (litre)

Px6 = Unit cost of labour (N /money)

K6 = Amount of labour (man-day)

Px7 = Unit cost transportation (N/km)

K7 = Distance of transport made (km)

TFC = Total fixed cost of implement (N) (Depreciated value), the depreciation method used for cassava production was the straight – line method, where equal periodic charges were estimated over the calculated life span of the assets. It was expressed as:

$$Dep. = \frac{O-S}{N} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3)$$

Where,

Dep = Depreciation

O = Original value of assets

S = Salvage value of the assets

N = Useful years of assets life.

Profitability index (PI):

Profitability index (PI) is the net farm income per unit of gross revenue (olukosi and Erhabor, 1988).

$$PI = \frac{NFI}{GR} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (4)$$

Where,

P1 = Profitability index

NFI = Net farm income

GR = Gross Revenue

Rate of Return on Investment (PRI):

Rate of Return on Investment Is a Performance Measure used to evaluate the efficiency of an investment or to compare the efficiency of different investments. Rate of return on

investment is net farm income divided by total cost of investment and is usually expressed as a percentage or ratio (Olukosi and Erhabor, 1988). It is expressed as follows:

$$RRI(\%) = \frac{NFI}{TC} \times \frac{100}{1}(\%) \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(5)$$

Where,

RRI = Rate of Return on investment

NFI = Net farm Income

TC = Total cost.

Capital Turnover Ratio (CTO):

Capital turnover (COT) is a ratio of total revenue by total cost. Generally it measures the efficiency of a business and provides information about the business capability to deliver a return per naira of its capital investment (Olukosi and Erhabor, 1988). Capital turnover is expressed as follows:

$$CTO = \frac{TR}{TC} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(6)$$

Where,

CTO = Capital Turnover

TR = Total Revenue

TC = Total Cost.

Results and Discussion

Socioeconomic Characteristics of Cassava Produces

Table 1: Socio-economic Characteristics of Cassava Producers

Variables	Frequency	Percentage
Gender		
Male	198	73.3
Female	72	26.7
Marital Status		
Married	211	78.1
Single	13	4.8
Divorced/Widowed	46	17.1
Age		

20 – 29	7	2.6
30 -39	63	23.3
40 – 49	151	55.9
Above 50	49	18.1
Educational Level		
Primary	81	30
Secondary	149	55.2
Tertiary	12	4.4
No Formal Education	28	10.4
Household Size		
1 – 4	41	15.2
5 – 7	75	27.8
8 – 10	142	52.6
Above 11	12	4.4
Farm Size		
0.5 – 0.99	19	7
1.0 – 1.99	43	15.9
2.0 – 2. 99	123	45.6
Above 3	85	31.5
Farming Experience		
1 – 5	46	17
6 – 10	97	35.9
Above 11	127	47.1
Source of labour		
Individual/Family	75	27.8
Communal	11	4.0
Hired	149	55.2
All of the above	35	13.0
Monthly Income		

(N)		
<10,000	11	4.1
10,001 - 20,000	18	6.7
30,001 - 30,000	41	15.2
30,001 - 40,000	143	52.9
Above 40,001	57	21.1

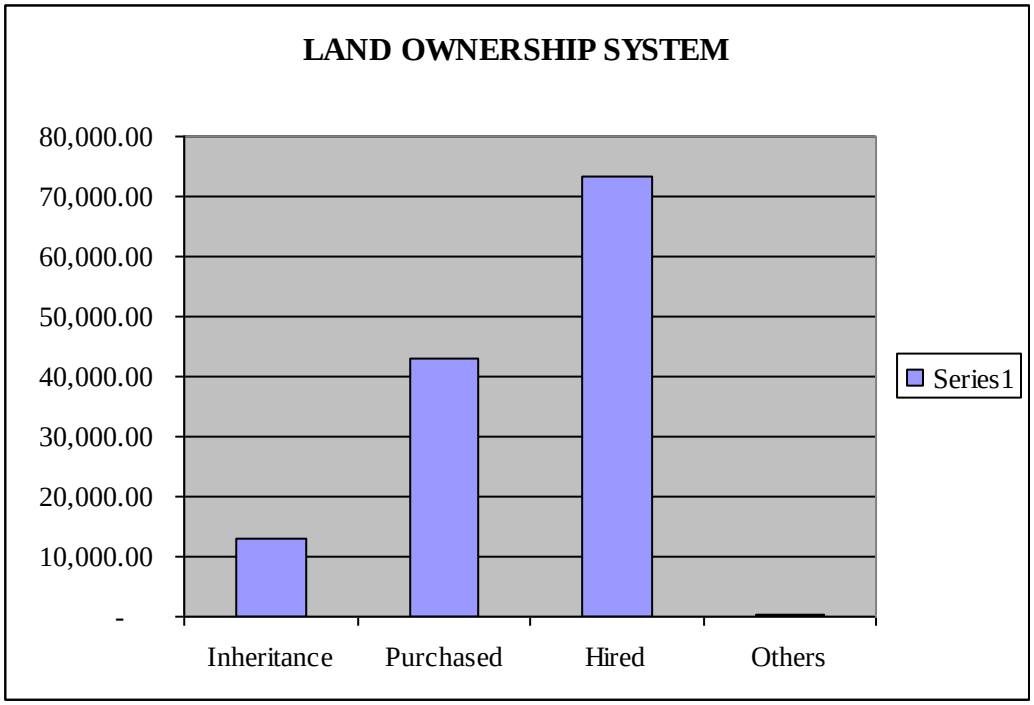
Source: Field Survey Data and Computation by the Researchers, 2015.

The results of cassava producers' socioeconomic characteristics were presented in table I. accordingly, most of the respondents were males comprising of 73.3% whereas 26.7% are females. This indicated high participation of males in cassava production in the study area compared to their female counterparts the high involvement of men may be due to high demand for labour in cassava production which women may not be able to combine with other household activities. The marital status of the respondents indicated that 78.1% of them were married, indicating that cassava production is dominated by married couples suggesting the chances of getting family labour in abundance for use in their production activities . Result also showed that about 79.2% of the respondents were age between 30-49 years. This implies that most of them were in their active productive age, as such they could easily be engaged in field crop production to cater for their needs and that of their families (Enimu, Igiri and Oduma, 2015). In terms of literary, most of the sampled cassava producers had one form of education or the other with majority of them 55.2% having secondary education and only 10.4% with no formal education, the others 30.0% and 4.4% had primary and tertiary education respectively. Thus they were found to be functionally literate in the study area.

Based on household size majority of the respondent 52.6% had household size ranging between 8-10 persons. This enables them to utilize their family members on the farm for the production of cassava producers 45.6% had farm sizes ranging between 2.0-2.99 hectares while 31.5% had above 3 hectares. This is indicative of the fact that most of the cassava producers in the study area are subsistence farmers. The sampled respondents were well experienced in cassava production as majority of them 83.05 ha been farming for about six years and above. The result also revealed that 55.2% of the cassava producers uses hired labour with 27.8% using family labour. This indicative of the high cost of labour recorded on the variable cost items. Finally, the table indicated that majority 52.9% of the cassava producers had N30, 001 –

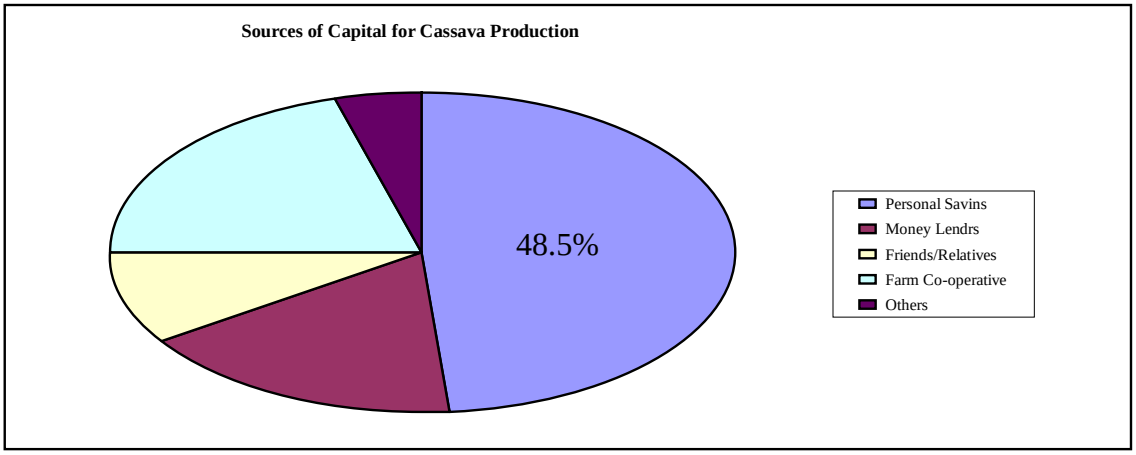
N40.000 as their monthly income with monthly income levels of <N10,00 N10,001-20,000, N20,001-30,000 and above N40,001 standing at 4.1%, 6.7%, 15.2% and 21.1% respectively.

Land Acquisition Method



The mode of land ownership and acquisition in the study area has been assessed as indicated in figure 1. Land as a unit of production is very important to the farmers. Accordingly, Majority of the cassava producers 48.5% acquire their land through inheritance, 27.1% of the respondents uses hired plots, while 15.9% purchased their Land. A minor segment of the producers 8.5% uses other methods of land acquisition such as share produce, leasehold and exchange plot respectively.

Sources of Capital for Cassava Producers



The sources of fund for cassava production were identified in the study. Figure 2 posit that majority of the cassava producers 48.5% source the capital through their personal savings, money lenders, friends, and relatives and Bank of Agriculture/Microfinance banks respectively. It is generally observed that none of the cassava producers obtain their capital through the mainstream commercial banks.

Profitability Analysis of Cassava Production

Table 2: Costs and Returns Analysis of Cassava Production/Hectare.

Items	**Value (N/ha)**	**Percentage (%)**
(i) Variable Costs		
Stem cuttings	21,850.00	21.2
Labour	28,500.00	27.8
Transportation	12,200.00	11.8
Fertilizer	15,350.00	14.9
Herbicides	13,730.00	13.3
total Variable Cost (TVC)	91,630.00	89.0

(ii) Fixed Costs

Rent on Land	10,250.00	10.0
Depreciation on Farm Tools	1,130.00	1.0
Total Fixed Costs (TFC)	11,380.00	11.0
Total Costs: TC (TVC + TFC)	103,010.00	100.0

(iii) Returns/Revenue (P.Y)

Sales of cassava tuber/products	260,200.00
Sales of Stem cuttings	10,250.00
Home Consumption	55,250.00
Total Returns/Reserve (TR)	325,700.00
Net Farm Income (NFI):	222,690.00
Profitability Index (PI):	0.68
Rate of Return on Investment (RI):	216.20
Capital Turnover (CTO):	3.16

Source: Field Survey Data and computation by the Researchers, 2015.

The profitability of any business can be deduced from the relationship between the cost incurred in running the farm business and the returns accruing to it (Adeyeye and Dittoh, 1985).

Table 2 showed the cost and returns associated with cassava production in the study area. The result showed that the total variable cost was N91,630 Accounting for 89.0% of the total cost of cassava production. The total fixed cost component of cassava production stood at N11,380 accounting for 11.0% of the total cost (TC) of cassava production. The total return/revenue (TR) accruing from the farm business was N325,700. The net farm income (NFI) was N222,690.00 per hectare, this result confirms that cassava production in the study area was profitable. These findings agreed with that of Nzech-Emeka and Ugwu (2014) who reported a net farm income of N347,500.00 per hectare of cassava production in Akoko North- West LGA of Ondo State, Nigeria. The profitability Index (PI) was 0.68, suggesting that for every naira earned as revenue, 68 kobo returned to cassava farmer as net income. The rate of return on investment (IPR) was estimated at 216.2%. Therefore, for every naira invested on cassava producer. Olukosi and Erhabor (1988) suggested that the higher the rate of return on investment the better the farm business. The capital turnover (CTO) per hectare is greater than 1 (3.16), indicating that for every naira invested per hectare of cassava production about N3.16 Kobo returned as revenue to the producers.

The foregoing therefore suggested that cassava production in the study area is a profitable venture that needs to be developed and built upon in Nigeria quest to be food secure and alleviate rural poverty.

Constraints of Cassava Production

Table 3: Constraints of Cassava Production

Problems	Frequency	Percentage	Rank
Samuel farm size	205	75.9	4th
High cost of inputs	210	77.8	3rd
Lack of improved varieties	98	36.6	9th
Inadequate provision of credit	261	96.7	1st
Transportation problems	223	82.6	2nd
Inadequate storage facilities	182	67.4	6th
Pests and diseases	87	32.2	10th
Low prices of produce	125	46.3	7th

Poor marketing facilities	193	71.5	5th
Insecurity	115	42.6	8th
Labour shortage	45	16.7	11th
Insufficient water supply	30	11.1	12th
Maximum responding unit	270*		

Source: Field Survey Data, 2015. *Multiple Responses.

Cassava farmers faced several constraints in their production activities. Table 3 investigated the major problems faced by cassava farmers in the study area the table showed that inadequate credit facility 96.7% which rank 1st was the most important problem facing them. Lack of access to credit reduces the scales of production thereby affecting their profitability as large scale production will leads to economies of scale. This was followed by transportation ranked 2nd with 82.6% and may be due to the bulkiness of cassava tubers. The next constraints faced by the sampled farmers in the study area in the ranked order included high cost of inputs (3rd), small farm size (4th), low prices of produce (5th), inadequate storage facilities (6th), poor extension services (7th), Insecurity (8th), lack of improved varieties (9th), pests and diseases (10th), labour shortage (11th), and insufficient water supply (12th) respectively.

Conclusion

From the study it can be concluded that cassava production was a profitable business in the study area and majority of the cassava producers practice the inheritance land tenure system which generally leads to land fragmentation over time.

It could also be concluded that source of capital favour personal savings and high interest rate money lender making inadequate capital as one of the major problem facing cassava producers.

Recommendations

Based on the research findings the following policy recommendations have been suggested.

- Farmers should form co-operative societies to enable them have access to credit facilities from financial institutions.
- Financial institutions should maintain the minimum reserve for agricultural sector development and should be able to judiciously implement it.
- Rural/fee diner roads should be constructed by the government to enable the farmers in the rural areas transport their produce easily to market for sale.

- ❖ Encouraging the use of disease resistant, high yielding improved stem cutting among farmers.
- ❖ Appropriate cassava storage facilities should be produced and encouraged their adoption among the farmers.
- ❖ Effective extension service delivery should be promoted to encourage improved productivity.

References

Adegeye, T. A. and Dittoh J. S. (1985), *Essentials of Agricultural Economics*, Ibadan: Impact Publishers Nigeria Limited. Pp 251.

Achike, A. I and Anzakui, T. A. K (2010) Economic Analysis of the marketing margin of Beniseed in Nassarawa State, Nigeria. *Journal of tropical Agriculture, Food, Environment and Extension.* 9 (1); 47-55.

Central Bank of Nigeria (CBN) (2004). *Annual Report and statement of Account Abuja, Nigeria.* PP 144.

Central Bank of Nigeria (CBN) (2008). *Statistical bulletin 2007*

Enimu, S.; Igiri, J., and Oduma S. J. (2015): An Assessment of the Performance of community Banks in Financing Resource Poor Farmers in Delta State, *International Research Journal of Marketing and Economics*, 2 (10): 64 – 75.

FAO (2004), the Global cassava Development Strategy International Fund for Agricultural Development, *Food and Agriculture Organisation of the United Nations, Rome* , 2004.

Federal Ministry of Agriculture, Water Resources and Rural Development (2011), Agricultural Transformation Agenda – *FMARD, Abuja* – Pp 7 – 17.

Food and Agriculture organization (FAO) (2005). The world cassava Economy- facts- Trends outlook: *FAO. Rome*, pp 64.

IITA.(2005). A Cassava Industrial Revolution in Nigeria. International Fund for Agricultural Development, *Food and Agriculture Organization. Rome*, 2004.

Nweke, F. I. (2004). New challenges in the cassava Transformation in Nigeria and Ghana. A view point. *UTA research* No. 14/ 15.

Nzeh-Emeka, C and Ugwu, J. N. (2014)"Economic analysis of production and marketing of cassava in Akoko North-West Local Government Area of Ondo State, Nigeria". *International Journal of Agricultural policy and Research*, 2(6): 234-237.

Nzeh-Emeka, C. and Ugwu, J. N. (2014) "Economics Analysis of Production and marketing of cassava in Akoko North-west Local Government Area of Ondo State, Nigeria" *International Journal of Agricultural Policy and research*, 2 (6): 234 – 237.

Olukosi, J. O. and Erhabor P. O. (1988) *Introduction to Farm Management Economics: Principles and application.* Zaria; Agitab Publishers Ltd. Third Edition. pp 114.

Yakasai, M. T. (2010): Economic contribution of cassava production. (A case study of Kuje area council Federal Capital Territory Abuja, Nigeria). *Bayero Journal of pure and applied sciences*, 3 (1); 215-219.